

ADDITIONAL NOTES ON THE ERIOCAULACEAE. XVII

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ERIOCAULON DECANGULARE L.

Additional synonymy: Eriocaulon longifolium Raf., Autikon Bot., pr. 1, 188. 1840 [not E. longifolium Nees, 1841].

Additional & emended bibliography: Ruhl. in Engl., Pflanzenreich 13 (4-30): 1, 31, 33, 35, 285, & 287. 1903; E. D. Merr., Ind. Rafin. 82. 1949; Moldenke, Phytologia 17: 490, 493, & 498--505, fig. 3. 1968.

Merrill (1949) reduces Rafinesque's E. longifolium to synonymy under E. decangulare L., probably mostly on the basis of the long and obtuse leaves. This species is, indeed, the only species of pipewort known from New Jersey whose leaves may attain the length of a foot (actually, to 35 cm.). Rafinesque's description of the flower-heads and the color of the involucreal bractlets of his plant is disturbing, but he very probably had an immature plant before him. Certainly he already knew E. compressum Lam., to which some parts of his description better apply, and described it as E. filiformis Raf. and whose leaves he would certainly never have referred to as "obtuse", even in an immature plant. I am, therefore, temporarily, at least, willing to go along with Merrill's disposition of the binomial.

It should be noted here that Rafinesque's binomial invalidates the E. longifolium Nees ex Kunth, Enum. Pl. 3: 567--568 (1841). I therefore hereby propose the substitute name, Eriocaulon willdenovianum Moldenke, nom. nov., for the plant of Nees von Esenbeck.

Additional citations: ALABAMA: County undetermined: Buckley s. n. [July 1840] (Br); Herb. Univ. Wisc. s. n. (Ws). MISSISSIPPI: Forest Co.: S. B. Jones 1872 (Mi); Keefe s. n. [11 May 1941] (Ws). George Co.: Demaree 33430 (Cb, Ss), 34861 (Ss). Hancock Co.: A. R. Moldenke 252 (Fg). Harrison Co.: Demaree 29700 (N), 29766 (N), 30610 (N), 32043 (Ca--987056, Mi), 32447a (Ok, St), 33408 (Cb, Ss); Diener 1209 (Ur); J. F. Joor s. n. [Long Beach, 8/8/91] (S); A. R. Moldenke 256 (Fg); Trécul 894 (B). Jackson Co.: Demaree 28077 (N, Ug), 31221 (Ca--987028), 32202 (Mi, St), 32306 (Ok, St), 33275 (Cb, Ss), 33597 (Z); Diener 276 (Ur), 664 (Ur); A. R. Moldenke 260 (Fg); A. B. Seymour 9199 [Seymour & Earle 16] (Hi--77046, S, Ws), s. n. [Seymour & Earle 16] (Lb--16525); Skehan s. n. [Ocean Springs, 7/2/95] (Dt); S. M. Tracy 6417 (Hi--77042). Pearl River Co.: Kral 17331 (N); A. R. Moldenke 251 (Fg). Stone Co.: Demaree 32584 (Le). LOUISIANA: Allen Par.: Kral 20970 (N). Concordia Par.: Arséne 11786 (B). Saint Tammany Par.: Arséne 11030 (B), 11786 (N); DeWolf

771 (Ms--11029); A. R. Moldenke 245 (Fg). Tangipahoa Par.: Correll & Correll 9316 (N). Vernon Par.: Kral 17223 (N), 20651 (N); R. McVaugh 8456 (M1). Parish undetermined: C. W. Short s.n. [Louisiana] (Ws). TEXAS: Angelina Co.: Correll & Wasshausen 27521 (Ld). Austin Co.: Tharp s.n. [near Sealy, 6/28/42] (Rf). Freestone Co.: Lundell & Lundell 12954 (Ld). Hardin Co.: Correll & Wasshausen 27567 (Ld), 27572 (Ld); Lundell & Lundell 11482 (Ld), 11527 (Ld), 11902 (Ld); Tharp, Gimbrede, & Yang 51-1449 (Ms--11031); Tharp, Turner, & Johnston 54922 (St). Harrison Co.: Demaree 29766 (St). Henderson Co.: Correll & Wasshausen 27497 (Ld); O. Sanders s.n. [May 11, 1957] (Rf). Jasper Co.: D. S. Correll 26761 (Ld); Correll & Correll 12516 (Rf); Correll & Johnston 19642 (Rf); C. L. Lundell 11793 (Ld). Leon Co.: F. A. Barkley 13556 (N). Milam Co.: Tharp 4434c (N), 4434d (N), 4434e (N, N). Robertson Co.: Novosad 80 (St); Painter & Barkley 13540 (N, N); Rowell 8050 (N), 8136 (N). Rusk Co.: Vinzent s.n. (B). San Augustine Co.: Gould & Leinweber 6532 (Ca--978707). Smith Co.: J. Reverchon s.n. [May 16, 1902] (E), s.n. [Swan, 6-9-1902] (E). Tyler Co.: Cory 49945 (Ca--754800, N); Tharp 44345 (Ok, S); Tharp, Turner, & Johnston 54954 (St); Webster & Wilbur 3199 (W--2067946). County undetermined: Wiedemann s.n. [Texas] (B). MEXICO: Michoacán: Arsène s.n. [Laguna, 6.8.1912] (B). LOCALITY OF COLLECTION UNDETERMINED: Boltwood s.n. (Ws); Buckley s.n. [So. States] (E); Collector undesignated s.n. [Amer. bor.] (S); Herb. Jacquin 3 [North America] (S); Palisot de Beauvois s.n. [America septentr.] (B); Stüvel s.n. [North America, 1819] (B); Mrs. Taylor s.n. [June, 1903] (Rf); Watson & Kelvington s.n. [U. S. A.] (S).

ERIOCAULON DECANGULARE var. LATIFOLIUM Chapm.

Synonymy: Eriocaulon decangular var. latifolium "Chapm. ex Moldenke" apud Kral, Sida 2: 305, in nota sphalm. 1966.

Bibliography: Moldenke, N. Am. Fl. 19: 21. 1937; Moldenke, Phytologia 1: 316. 1939; Moldenke, Known Geogr. Distrib. Erioc. 2, 3, & 34. 1946; Moldenke, Phytologia 3: 322. 1950; Moldenke, Résumé 12, 14, & 480. 1959; Kral, Sida 2: 305. 1966; Shinners, Sida 2: 441. 1966; Moldenke, Phytologia 17: 500. 1968.

ERIOCAULON DECANGULARE var. MINOR Moldenke

Bibliography: Moldenke, Phytologia 15: 462 (1968) and 17: 501 & 502. 1968; Moldenke, Biol. Abstr. 49: 3245. 1968; Moldenke, Résumé Suppl. 16: 2. 1968.

Collectors have found this plant in bogs, moist places in bogs, and forming tufts in sandy peat of bogs in longleaf pine savannas, flowering and fruiting in May and August. Material has been misidentified and distributed in herbaria as E. decangulare L., E. septangulare With., and E. texense Körn.

Citations: LOUISIANA: Beauregard Par.: Kral 17208 (N). TEXAS: Robertson Co.: F. A. Barkley 13543 (N--type, N--isotype); Rowell 8071 (Ms--11040).

ERIOCAULON DECEMFLOLUM Maxim.

Synonymy: Eriocaulon decemflorum var. genuinum Nakai in Matsum., Icon. Pl. Koisik. 2: 47. 1914. Eriocaulon decemflorum var. genuinum f. typicum Nakai in Matsum., Icon. Pl. Koisik. 2: 47. 1914. Eriocaulon decemflorum var. decemflorum (Maxim.) Koyama ex Moldenke, Résumé 287, in syn. 1959. Eriocaulon decemfolium Maxim. ex Moldenke, Résumé Suppl. 3: 32, in syn. 1962. Eriocaulon denciflorum Maxim. ex Moldenke, Résumé Suppl. 3: 32, in syn. 1962. Eriocaulon decemlobflorum Maxim. ex Moldenke, Résumé Suppl. 3: 32, in syn. 1962.

Bibliography: Maxim., Bull. Acad. Sci. St. Pétersb. [Dec. Pl. Asiat.] 8: 7. 1893; Mak., Bot. Mag. Tokyo 8: 506. 1894; Durand & Jacks., Ind. Kew. Suppl. 1, pr. 1, 158 & 501. 1902; Ruhl. in Engl., Pflanzenreich 13 (4-30): 32, 37, & 285. 1903; Matsum., Ind. Pl. Jap. 2 (1): 175. 1905; Matsum., Icon. Pl. Koisik. 2: 47. 1914; Mori, Enum. Pl. Corea 80. 1922; Mak. & Nemoto, Fl. Jap., ed. 1, 1304 (1925) and ed. 2, 1510. 1931; Masamune, Mem. Fac. Sci. Agr. Taihoku Univ. 11, Bot. 4: 537 & 538. 1934; Steinb., Fl. U. R. S. S. 3: 496, pl. 27, fig. 1. 1935; Nemoto, Suppl. Fl. Jap. 1038. 1936; Honda, Nom. Pl. Jap. 462. 1939; Satake, Bull. Tokyo Sci. Mus. 4: [Rev. Jap. Erioc.] 4--9. 1940; Nakai & Honda, Nov. Fl. Jap. 6: 44. 1940; Durand & Jacks., Ind. Kew. Suppl. 1, pr. 2, 158 & 501. 1941; Moldenke, Known Geogr. Distrib. Erioc. 24, 25, & 34. 1946; Moldenke, Phytologia 3: 322--323. 1950; Koyama, Journ. Jap. Bot. 31: 9. 1956; Moldenke, Résumé 167, 171, 173, 287, & 480. 1959; Durand & Jacks., Ind. Kew. Suppl. 1, pr. 3, 158 & 501. 1959; Moldenke, Résumé Suppl. 3: 18, 21, 31, & 32. 1962; Koyama in Kitamura, Murata, & Koyama, Col. Illustr. Herb. Pl. Japan 177--178, fig. 120 (1), pl. 48, fig. 303. 1964.

Illustrations: Steinb., Fl. U. R. S. S. 3: pl. 27, fig. 1. 1935; Koyama in Kitamura, Murata, & Koyama, Col. Illustr. Herb. Pl. Japan 177, fig. 120 (1) & pl. 48, fig. 303. 1964.

Satake (1940) describes this plant as follows: "Herba annua, acaulis, usque 5--15 cm alta, vel raro valde debilis. Radices fibroso-albae, spongiosae, transverse septatae. Folia linearia, apice attenuata, glabra, 3--5 fenestrato-nervia, pedunculis breviora. Pedunculi exiles, 4-costati. Vaginae teretes sublaevae, 3 cm longae, apice oblique fissae. Capitula turbinata, 3--4 mm longa et lata, albida, 10-flora vel pauciflora. Bracteae involu-crantes ovato-lanceolatae, quam flores longiores. Bracteae florum oblanceolato-lineares, apice acutae, 1-nerves, hyalinae, apicem margine et dorso pilis clavatis vel subelongatis pilosae. Flos ♂: 2 mm longus; sepala 2, basi connata, lobis lanceolatis, apice acutiusculis pilis albis clavatis 2-cellulatis puberulis; petala 2, in tubum apice 2-lobatum connata, lobis ovatis apice pilis albis

clavatis 2-cellulatis puberulis, intus apicem glandula nigra unica instructis; stamina 4, raro 2--3, antheris nigris rotundatis; in centro pistilli rudimentum nigro-glandulosum dispositum. Flos ♀: 1.5 mm longus, breve stipitatus; sepala 2, libera, lineari-lanceolata, apice acuta, glabra vel apicem margine sparse pilosa; petala 2, libera, lineari-spathulata, apice obtusa, albo-spongiosa cellulis oblongis composita, apicem intus et margine pilis elongatis 2--3-cellulatis barbata, intus apicem glandula nigra unica coronata; capsula 2-cocca; stylus brevis crassus, capsula conspique brevior; stigmata 2, stylo conspique longiora; semina elliptica, 0.7--0.9 mm longa, supra hamato-papillosa."

He reminds us, also, that "This variety was divided into two forms, typicum Nakai and coreanum Nakai, by Prof. T. Nakai in Matsumura, Icon. Pl. Koisikaw, II, 47 (1914). The former has perfect flowers, while the latter has abortive flowers. It was originally named Eriocaulon coreanum by Lecomte, based on the specimen collected by U. Faurie in the Saisyuto Island of Tyosen."

It is worth noting here that E. decemflorum Komarov (1940), E. decemflorum var. nipponicum (Maxim.) Nakai, E. decemflorum var. nipponicum f. typicum Nakai, and E. decemflorum var. nipponicum f. yoshinoi Nakai are all now regarded as E. nipponicum Maxim., E. decemflorum var. genuinum f. coreanum (H. Lecomte) Nakai and E. decemflorum var. coreanum Nakai are now regarded as E. decemflorum f. coreanum (H. Lecomte) Nakai, and E. decemflorum var. nipponicum f. glaberrimum Satake is E. nipponicum var. glaberrimum Satake. Koyama (1964), however, regards E. nipponicum Maxim. as conspecific with and a synonym of E. decemflorum Maxim.

Recent collectors have found this plant growing in dryish soil in open grasslands, sandy soil of pond margins by the coast, wet open grasslands, wet sedge meadows, and wet fields at streamsides, at 1100--1450 meters altitude, flowering in August and October. Koyama 13104 bears a notation that the plant was "scattered in wet meadows with Parnassia; a robust specimen merging to nipponicum". On Ohwi & Koyama s.n. [18 October 1954] the collectors note "flowers perfectly dimerous". The vernacular name, "ko-inunohige", is recorded for the species.

Satake (1940) cites the following collections: JAPAN: Honshu: Hasimoto s.n. [Oct. 1928]; Hayata s.n. [Aug. 1924]; Hisauti 853; Itô s.n.; Iwabuti 5426 & 5471; Kawakami s.n. [Oct. 1894]; Koidzumi 34099, 34100, 34101, & 63805; Satow 451. Kiushu: Doi 92 & 238; Koidzumi s.n. [Sept. 1921]; Masamune s.n. [Aug. 1926]; Muramatsu 296; Takahasi 11; Tasiro s.n. [Aug. 1916]; Yamamoto s.n. [Aug. 1925]. KOREA: Tyô 43. KOREAN COASTAL ISLANDS: Saisyû-tô: Nakasima 114.

Additional citations: WESTERN PACIFIC ISLANDS: JAPAN: Honshu: Furuse s.n. [Naka-tashiro, 18 Aug. 1954] (S), s.n. [Imoto-numa, 16 Sept. 1954] (S), s.n. [Utsukushi-no-mori, 31 August 1955] (Ca-

59913, S, S, S, S, S), s.n. [Mt. Mitsu-tooge, 7 Sept. 1955] (S); Koyama 13104 (Ss); Koyama & Ito 13108 (Z); Ohwi & Koyama s.n. [18 October 1954] (Ss).

ERIOCAULON DECENFLORUM f. COREANUM (H. Lecomte) Nakai

Synonymy: Eriocaulon coreanum H. Lecomte, Not. Syst. 1: 191--192. 1910. Eriocaulon decemflorum var. genuinum f. coreanum (H. Lecomte) Nakai in Matsum., Icon. Pl. Koisik. 2: 47. 1914. Eriocaulon decemflorum f. coreanum Nakai ex Masamune, Mem. Sci. Fac. Agr. Taihoku Univ. 11, Bot. 4: 537 & 538. 1934. Eriocaulon decemflorum var. coreanum Nakai ex Moldenke, Résumé 287, in syn. 1959.

Bibliography: H. Lecomte, Not. Syst. 1: 191--192. 1910; Prain, Ind. Kew. Suppl. 4, pr. 1, 82. 1913; Nakai in Matsum., Icon. Pl. Koisik. 2: 47. 1914; Masamune, Mem. Sci. Fac. Agr. Taihoku Univ. 11, Bot. 4: 537 & 538. 1934; Prain, Ind. Kew. Suppl. 4, pr. 2, 82. 1938; Satake, Bull. Tokyo Sci. Mus. 4: [Rev. Jap. Erioc.] 5. 1940; Moldenke, Known Geogr. Distrib. Erioc. 25 & 61. 1946; Moldenke, Résumé 171, 173, 287, & 480. 1959; Moldenke, Résumé Suppl. 1: 12 (1959) and 3: 18 & 21. 1962.

This taxon is said by Satake (1940) to be based on a specimen collected by Père Urbain Jean Faurie on Saisyû-tô Island in the Korean Coastal Islands. Actually, however, the type of the taxon was collected by Père Emile Joseph Taquet (no. 1738) "dans les herbes humides, 1700 m. alt." on Quelpart Island. Recent collectors have found the plant growing at 1700--1800 meters altitude, flowering in October. A vernacular name recorded for it is "tanna-imunohige".

Citations: KOREAN COASTAL ISLANDS: Quelpart: Taquet 1738 (B-isotype, Z--isotype). WESTERN PACIFIC ISLANDS: RYUKYO ISLAND ARCHIPELAGO: SATSUNAN ISLANDS: Yakushima: Hatusima 14844a (Kg).

ERIOCAULON DECIPIENS N. E. Br.

Bibliography: N. E. Br. in Thiselt.-Dyer, Fl. Trop. Afr. 8: 245. 1901; Ruhl. in Engl., Pflanzenreich 13 (4-30): 75 & 285. 1903; Prain, Ind. Kew. Suppl. 3: 69. 1908; Moldenke, Known Geogr. Distrib. Erioc. 47. 1946; Moldenke, Phytologia 3: 323. 1950; Moldenke, Résumé 149, 287, & 480. 1959.

Recent collectors have found this plant growing in swamps at 2400 meters altitude.

Additional citations: RHODESIA: Nordlindh & Weimarck 4983 (S).

ERIOCAULON DEHNIAE H. Hess

Bibliography: H. Hess, Bericht. Schweitz. Bot. Gesell. 67: 84-87. 1957; Moldenke, Résumé Suppl. 1: 10 & 25. 1959; G. Taylor, Ind. Kew. Suppl. 13: 52. 1966.

This species is said to be endemic to Rhodesia (the former Southern Rhodesia).

ERIOCAULON DEIGHTONII Meikle

Bibliography: Meikle, Kew Bull. 22: 143. 1968.

This species is said by Meikle (1968) to be related to E. transvaalicum N. E. Br., but differing in having subulate leaves, many scapes, the heads pale-brownish, the sepals of the pistillate florets conspicuously unequal, and the larger of these conspicuously alate-keeled. The type was collected by H. D. Jordan (no. 946) near Mando, Mambolo, Sierra Leone, on October 15, 1953, and is deposited in the herbarium of the Royal Botanic Gardens at Kew. He cites, in addition, the following collections, presumably all deposited at Kew: GUINEA: Chillou 726; Pitot s.n. [Pita, 16 Oct. 1950]. SIERRA LEONE: Adames 88 & 245; Deighton 2795 & 4402, in part; Jordan 92, 113, 164, 533, 574, 622, & 816.

ERIOCAULON DEMBIANENSE A. Chiov.

Bibliography: A. Chiov., Ann. Bot. Roma 9: 148. 1911; Prain, Ind. Kew. Suppl. 5, pr. 1, 97 (1921) and pr. 2, 97. 1960; Moldenke, Résumé Suppl. 10: 4. 1964.

Mooney, on the label of the specimen cited below, comments that the plant is "possibly not distinct from E. branningtonii N. E. Br." He is doubtless here referring to E. transvaalicum var. hanningtonii (N. E. Br.) Meikle.

Citations: ETHIOPIA: H. F. Mooney 9012 (S, Z).

ERIOCAULON DENSUM Mart.

Bibliography: Colla, Herb. Pedem. 5: 483--484. 1836; A. W. Hill, Ind. Kew. Suppl. 9: 105. 1938.

The original description of this taxon is: "Mart: in sched: (Brasil:). Plantula densissime caespitosa, folia omnia radicalia in globulum diam: vix pollicari fasciculata linearia leviter striata uti scapi puberula, scapi palmares et ultra erecti tenuissime filiformes ac fere capillares levissime spiraliter sexangulati, capitulum pauciflorum squamis extimis vacuis involucribus ovatis scariosis floralibus duplo longioribus radiantibus lanceolatis glaberrimis niveis; ab flosculorum tenuitate neque in hac neque in sequenti staminum numerum et capsulae structuram determinare potui."

Nothing is known to me about this taxon except what is given in the above description. It is not accounted for in Ruhland's monograph (1903).

ERIOCAULON DEPAUPERATUM Merr.

Bibliography: E. D. Merr., Philip. Journ. Sci. Bot. 5: 336. 1910; Prain, Ind. Kew. Suppl. 4, pr. 1, 82 (1913) and pr. 2, 82. 1938; Moldenke, Known Geogr. Distrib. Erioc. 26 & 34. 1946; Moldenke, Résumé 184 & 480. 1959; Moldenke, Phytologia 17: 496. 1968.

Mrs. Clemens found this species forming a sod in a pond at 8500 feet altitude, flowering and fruiting in December. The H. Bruce 9, distributed as E. depauperatum, is actually E. cristatum Mart.

Citations: WESTERN PACIFIC ISLANDS: PHILIPPINE ISLANDS: Luzon: M. S. Clemens 18711 (Ca--374780, S), s.n. [Dec. 15, 1923] (Ca--244071); E. D. Merrill 6590 (N--cotype); Ramos & Edaño s.n. [Herb. Philip. Bur. Sci. 40523] (B).

ERIOCAULON DEPRESSUM R. Br.

Synonymy: Eriocaulon deustum R. Br., Prod. Fl. Nov. Holl. 1: 255. 1810. Randalia depressa Beauv. & Desv. apud Kunth, Enum. Pl. 3: 571, in syn. 1841. Randalia densa Beauv. & Desv. apud Kunth, Enum. Pl. 3: 571, in syn. 1841. Randalia depressa Beauv. apud Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 1, 2: 681, in syn. 1895. Randalia densa Beauv. apud Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 1, 2: 681, in syn. 1895. Eriocaulon depressum "Br. ex Sm." apud Britten, Journ. Bot. 38: 481 & 482, in syn. 1900. Randalia deusta Beauv. & Desv. ex Moldenke, Résumé 342, in syn. 1959.

Bibliography: R. Br., Prod. Fl. Nov. Holl. 1: 255. 1810; Desv., Ann. Sci. Nat. Paris, sér. 1, 13: 47. 1828; Kunth, Enum. Pl. 3: 571. 1841; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 1, 1: 878 (1893) and 2: 681. 1895; Britten, Journ. Bot. 38: 481 & 482. 1900; Ruhl. in Engl., Pflanzenreich 13 (4-30): 33, 38, 39, & 285. 1903; F. M. Bailey, Compreh. Cat. Queensl. Pl. 584. 1913; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 2, 1: 878 (1946) and 2: 681. 1946; Moldenke, Known Geogr. Distrib. Erioc. 27 & 34. 1946; Moldenke, Résumé 209, 287, 342, & 480. 1959; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 3, 1: 878 (1960) and 2: 681. 1960.

Kunth (1841) distinguishes Robert Brown's two supposed species as follows: E. deustum — "Scapo angulato-striato (sesquiunciali), foliis compresso-fistulosis vix longiore; capitulo depresso; squamis fere omnibus floriferis: extimis rotundatis; reliquis mucronulatis; utrisque imberbibus; perianthii feminei exterioribus foliolis lateralibus carina dilatato-alata." E. depressum — "Scapo multistriato (spithamaeo), foliis fistulosis compressis longiore; capitulo florido depresso; squamis omnibus floriferis, imberbibus: extimis rotundatis; perianthii feminei exterioribus foliolis lateralibus carina dilatato-alata." Both specific epithets are sometimes written with an uppercase initial letter, for no valid reason.

Although Kunth (1841) and Jackson (1895) both cite the Randalia combinations to Desv., Ann. Sci. Nat. Paris, sér. 1, 13: 47 (1828), they are actually not made there, being only implied. Jackson (1893) reduces E. heterogynum F. Muell. to synonymy under E. depressum.

Citations: AUSTRALIAN REGION: AUSTRALIA: Queensland: Banks & Solander s.n. [New Holland, 1770] (B--isotype, Z--isotype); Storr 13013 (Qu).

ERIOCAULON DESLANDESII Alv. Silv.

Bibliography: Alv. Silv., Fl. Mont. [1] & 421, pl. 253. 1928;

A. W. Hill, Ind. Kew. Suppl. 9: 105. 1938; Moldenke, Known Geogr. Distrib. Erioc. 7 & 34. 1946; Moldenke, Phytologia 3: 322. 1950; Reitz, Sellowia 7: 124. 1956; Moldenke, Résumé 88 & 480. 1959; Reitz, Sellowia 11: 31 & 103 (1959) and 13: 52, 53, 72, & 90. 1961.

Illustrations: Alv. Silv., Fl. Mont. pl. 253. 1928.

Common names recorded for this plant are "capim manso", "capipoatinga", "gravatá manso", and "semprevivas do campo".

Additional citations: BRAZIL: Santa Catarina: Reitz 3505 (S), 4696 (Le); Reitz & Klein 857 (Le), 5428 (Z); Smith & Klein 8204 (W--2248752).

ERIOCAULON DIAGUISENSE Bourdu

Bibliography: Bourdu, Bull. Soc. Bot. France 104: 156, fig. A--F. 1957; Anon., Assoc. Etud. Tax. Fl. Afr. Trop. Index 1957: 33. 1958; Moldenke, Résumé 426 & 480. 1959; Moldenke, Résumé Suppl. 1: 8. 1959; G. Taylor, Ind. Kew. Suppl. 13: 52. 1966.

This species is apparently endemic to the Republic of Guinea (formerly French Guinea) and is characterized by sessile flowers in a basal rosette of leaves. It is illustrated in the original publication.

ERIOCAULON DIANAE Fyson

Synonymy: Eriocaulon dianae var. typicum Fyson, Journ. Indian Bot. 2: 259. 1921.

Bibliography: Fyson, Journ. Indian Bot. 1: 50 (1919) and 2: 259--260, pl. 11 & 12. 1921; A. W. Hill, Ind. Kew. Suppl. 6: 78 (1926) and 7: 88. 1929; C. E. C. Fischer, Kew Bull. Misc. Inf. 1931: 261. 1931; C. E. C. Fischer in Gamble, Fl. Presid. Madras 9: 1614--1615 & 1620. 1931; Moldenke, Known Geogr. Distrib. Erioc. 23, 34, & 61. 1946; Razi, Journ. Mysore Univ. 7 (4): 77. 1946; Moldenke, Phytologia 3: 323. 1950; Moldenke, Résumé 162, 165, 287, & 480. 1959; Moldenke, Résumé Suppl. 1: 13. 1959; G. L. Shah, Bull. Bot. Surv. India 4: 236. 1962; Moldenke, Résumé Suppl. 6: 8. 1963; Thanikaimoni, Pollen & Spores 7: 184. 1965; Moldenke, Résumé Suppl. 16: 9 & 21. 1968; Moldenke, Phytologia 17: 461. 1968.

Illustrations: Fyson, Journ. Indian Bot. 2: pl. 11 & 12. 1921.

The original description of this taxon by Fyson (1921) is as follows: "Caulis perbrevis. Folia lanceolata, 3--7 cm. longa, 4--6 mm. lata, plana, glabra. Pedunculi complures, 7--15 cm. aut longiores, glabra. Capitula 5--8 cm. hemisphaerica; bractae involucrentes stramineae et glabrae, quam capitulo longiores aut aequantes, aut demum reflexae. Bractae flores superantes obovato-cuneatae, summo-dorse puberulae, viridi nigrescentes. Flores trimeri. Flos ♂: sepala in spatham antica fissam, connata, antherae nigrae. Flos ♀: sepala inaequalia, duo navicularia dorso puberula, unum planum, lanceolatum aut linearium, et quam ceteris brevius. Plate 11. Peninsular India; Western Ghats from Mt. Abu and Bombay to Calicut. I include in this species a large number

of forms the extremes of which are sufficiently distinct to be considered good species, were it not for the intermediates which grade into each other, for even the 7 varieties given below are not easily separated." As type of the species he appears to designate Fyson 3819 "at Rudrasiri".

He describes his var. typicum as "Bractae involucrantes quam capitulo longiores. ♀ floris tertius sepalum planum, oblanceolatum Bractae involucrantes quam capitulo longiores, femini floris tertium planum. Plate 12. Salsette to S. Kanara. A beautiful little plant, the tips of the involucrel bracts showing beyond the margin of the head when seen from above. The head itself may be nearly flat, hemispherical, globose, or even ovoid, taller than broad, depending apparently on local conditions. The third female sepal is flat but not much shorter than the other and not linear as in the other varieties. The larger heads can be distinguished only by the female sepals (the two larger being much more boat-shaped and the third flat) from E. quinquangulare L."

For his unnamed "Var. e" he notes "Folia quam var. a etc. angustiora, etiam linearia; capitula globosa, alba aut nigrescentia; bractae reflexae. Hills near Bombay. Leaves acicular. Heads small, globose with reflexed bracts, connects var. a to the next [f. triloboides]."

It is worth noting here that E. diana var. triloboides Fyson, referred to above, is now regarded as a synonym of E. collinum Hook. f.

Recent collectors have found E. diana growing at 3500 feet altitude. Shah reports it to be "common in rice fields and moist places", Santapau says "common in cultivated fields", and Herbert notes "very common and abundant in paddy fields" in Bombay. It has been collected in anthesis from November to January and in March. The Meebold 10320, cited below, was actually identified as this species by Fyson himself.

Material has been misidentified and distributed in herbaria as E. quinquangulare L. and E. truncatum Hamilt. On the other hand, the Ramaswamy 1745 distributed as E. diana is actually E. cinereum R. Br., while Fyson 3819 is E. diana var. longibracteatum Fyson.

Additional citations: INDIA: Bombay: R. R. Fernandez R.465 (Xa), R.2175 (Xa), R.2176 (Xa); P. S. Herbert 1048 (Xa), 1222 (Xa); Patel 6 (Lw); Santapau 10263 (N, Xa), 17953 (Xa); G. L. Shah 1179 (Xa, Xa), 1803 (Xa), 7928 (Xa), 7938 (Xa), 8056 (Xa). Mysore: Meebold 10320 (S, Z). THAILAND: E. J. Schmidt 250 (Cp), 302a (Cp).

ERIOCAULON DIANA var. LONGIBRACTEATUM Fyson

Synonymy: Eriocaulon diana var. longi-bracteata Fyson, Journ. Indian Bot. 2: 259--260, pl. 13. 1921. Eriocaulon diana var. longibracteata Fyson ex C. E. C. Fischer, Kew Bull. Misc. Inf. 1931: 261. 1931. Eriocaulon diana var. longibracteatum Fyson

ex Santapau, Bull. Bot. Surv. India 8: 48. 1967.

Bibliography: Fyson, Journ. Indian Bot. 2: 259—260, pl. 13. 1921; C. E. C. Fischer, Kew Bull. Misc. Inf. 1931: 261. 1931; C. E. C. Fischer in Gamble, Fl. Presid. Madras 9: 1620. 1931; Razi, Journ. Mysore Univ. 7 (4): 77. 1946; Moldenke, Known Geogr. Distrib. Erioc. 23 & 34. 1946; Moldenke, Phytologia 3: 323. 1950; Santapau & Raizada, Indian For. Rec. 4 (6): 167. 1955; Moldenke, Résumé 162, 287, & 480. 1959; Moldenke, Résumé Suppl. 1: 13. 1959; G. L. Shah, Bull. Bot. Surv. India 4: 237. 1962; Santapau, Bull. Bot. Surv. India 8: 48. 1967; Moldenke, Résumé Suppl. 16: 9 & 21. 1968; Moldenke, Phytologia 17: 489. 1968.

Fyson (1921) describes this taxon as "♀ floris tertius sepalum linearium.....Bractae involucrantes quam capitulo multo longiores; floris sepalum tertius latum aut linearium. Calicut. Plate 13. Leaves 2—2 1/2 in. by 1/5 in. and scapes about twice as long. Heads 1/4 in. diam. with bracts spreading below over 1/2 in. across in all. Corresponds to var. martiana of E. quinquangulare and might be considered that plant with one sepal smaller and flat."

Recent collectors describe the flowers as white and have found the plant blooming in October, growing at 300 meters altitude. It is recorded from Saurashtra by Santapau (1967), who says that it is "not common in rice fields" or "very abundant in some rice fields" in Bombay. He and Raizada (1955) call it "A very rare plant, collected on moist soil" in the same state, while Smitinand reports it "common in damp localities in dry deciduous forests" in Thailand.

Material has been misidentified and distributed in herbaria as E. collinum Hook. f., E. diana Fyson, E. sexangulare L., and E. stellulatum Körn. The Fyson 3819 specimen in the Stockholm herbarium, cited below, was first identified by the collector as E. stellulatum and then changed to "E. diana sp. nov." If it is truly a part of the type collection of E. diana Fyson and not a mixture with it, then it cannot be taken as representative of var. longibracteatum. It should be re-examined and compared with more specimens of the same collection number.

Additional citations: INDIA: Bombay: D'Almeida 218.1 H (Xa); J. Fernandez 624c (Xa), 664 (Xa); Patel 8 (Lw); Santapau 10278 (N, Xa), 10279 (N, Xa), 15118 (Xa), 17120 (Xa), 17121 (Xa), 17204 (Xa), 17463 (Xa), 17464 (Xa), 17465 (Xa), 17466 (Xa), 17467 (Xa), 17521 (Xa), 17522 (Xa, Z), 17529 (Xa); G. L. Shah "A" (Xa). Mysore: Fyson 3819 (S); Gopalaswamy s.n. [Castle Rock, 7-10-51] (Bn--3244). THAILAND: Larsen 8397 (Cp), 8402 (S); Smitinand 3065a [Royal Forest Dept. 18263] (Sm).

ERIOCAULON DIANAE var. PARVIFLORUM Fyson

Synonymy: Eriocaulon diana var. parviflora Fyson, Journ. Indian Bot. 2: 260. 1921.

Bibliography: Fyson, Journ. Indian Bot. 2: 260. 1921.

Fyson (1921) describes this taxon as follows: "Bractae involu-
crantes quam capitulo nex longiores.....Bractae involu-
crantes capitulo aequantes; floris tertius sepalum planum aut linearium.
Coorg and N. Kanara. The head has no rays, the bracts being
short, and the flowers are much smaller than in var. a and b.
Possibly a poor form of var. b but apparently distinct." His
"var. a" is typical E. dianae Fyson, while his "var. b" is E.
dianae var. longibracteatum Fyson.

ERIOCAULON DIANAE var. RICHARDIANUM Fyson

Synonymy: Eriocaulon dianae var. richardiana Fyson, Journ.
Indian Bot. 2: 260, pl. 14. 1921.

Bibliography: Fyson, Journ. Indian Bot. 2: 260, pl. 14. 1921;
C. E. C. Fischer, Kew Bull. Misc. Inf. 1931: 261. 1931; C. E. C.
Fischer in Gamble, Fl. Presid. Madras 9: 1616 & 1620. 1931; Mol-
denke, Known Geogr. Distrib. Erioc. 23 & 34. 1946; Razi, Journ.
Mysore Univ. 7 (4): 77 (1946) and 11 (1): 6. 1950; Moldenke,
Phytologia 3: 323. 1950; Moldenke, Résumé 162, 287, & 480. 1959;
Thanikaimoni, Pollen & Spores 7: 184. 1965.

Illustrations: Fyson, Journ. Indian Bot. 2: pl. 14. 1921.

Fyson (1921) describes this taxon as follows: "Planta robus-
tior; pedunculi 20--25 cm; folia 15--20 cm.; capitula globosa;
bractae involu-
crantes breviores, reflexae. Plate 14. S. Kanara.
A robust plant with globose unrayed heads. Stem 1/4 in. thick
and 1/2 in. long. Scape up to 14 inches very slightly pubescent
in the most robust specimens. The third female sepal much
shorter than the others and linear. Seeds oblong light yellow."

Razi (1950) cites the type of this taxon, again, as Fyson
3819, of which he says there are three sheets in the Mysore Uni-
versity herbarium. Since no type is cited in the original de-
scription, Razi's material should ordinarily be considered as
lectotype material. However, Fyson designates "Fyson. No. 3819
at Rudrasiri" as the type of E. dianae as a species and therefore,
by implication, of his var. typicum. I have annotated a specimen
of this number at Stockholm as var. longibracteatum. If Razi is
correct in his assertion that three sheets of the same number in
the Mysore University herbarium are var. richardianum, it would
appear that the number perhaps represents a mixture.

Both Santapau and Wagh describe var. richardianum as "rare".
It has been collected in ditches, the inflorescence erect, grow-
ing at 2800 feet altitude, flowering in October.

Additional citations: INDIA: Andhra: Santapau 21388 (Xa); S.
K. Wagh 4697 (Xa). Bombay: Sedgwick & Bell 5048 (N, Xa).

ERIOCAULON DICLINE Maxim.

Bibliography: Maxim., Bull. Acad. Sci. St. Pétersb. [Dec. Pl.
Asiat.] 8: 7. 1893; Durand & Jacks., Ind. Kew. Suppl. 1, pr. 1,
158 & 501. 1902; Ruhl. in Engl., Pflanzenreich 13 (4-30): 65, 94,
& 285. 1903; Satake, Bull. Tokyo Sci. Mus. 4: [Rev. Jap. Erioc.]
64. 1940; Durand & Jacks., Ind. Kew. Suppl. 1, pr. 2, 158 & 501.

1941; Moldenke, Known Geogr. Distrib. Erioc. 25 & 34. 1946; Moldenke, Résumé 173 & 480. 1959; Durand & Jacks., Ind. Kew. Suppl. 1, pr. 3, 158 & 501. 1959.

ERIOCAULON DICTYOPHYLLUM Körn.

Synonymy: Paepalanthus dictyophyllum Mart. ex Körn. in Mart., Fl. Bras. 3 (1): 486, in syn. 1863. Eriocaulon fluviatile Bong. ex Moldenke, Résumé Suppl. 1: 17, in syn. 1959 [not E. fluviatile Trimen, 1885]. Eriocaulon dictyophyllum Mart. ex Moldenke, Résumé Suppl. 12: 9, in syn. 1965. Eriocaulon fluviatile Mart., in herb.

Bibliography: Körn., Linnaea 27: 600. 1856; Körn. in Mart., Fl. Bras. 3 (1): 485—486. 1863; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 1, 1: 878. 1893; Ruhl. in Engl., Pflanzenreich 13 (4-30): 43, 51, 59, & 285. 1903; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 2, 1: 878. 1946; Moldenke, Known Geogr. Distrib. Erioc. 7, 34, & 47. 1946; Moldenke, Phytologia 3: 323. 1950; Reitz, Sellowia 7: 124. 1956; Angely, Fl. Paran. 10: 14. 1957; Moldenke, Résumé 88, 324, & 480. 1959; Reitz, Sellowia 11: 31 & 103. 1959; Moldenke, Résumé Suppl. 1: 17. 1959; Rennó, Levant. Herb. Inst. Agron. 68. 1960; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 3, 1: 878. 1960; Angely, Fl. Paran. 16: 51 (1960) and 17: 24. 1961; Moldenke, Résumé Suppl. 12: 9. 1965; Dombrowski & Kuniyoshi, Arucariana 1: 15. 1967.

The binomial, E. fluviatile Mart., is apparently based on L. Riedel 2303 from São Paulo, which is also a cotype collection of E. dictyophyllum Körn., while Paepalanthus dictyophyllum Mart. is based on Martius s.n. from Minas Gerais. Eriocaulon fluviatile Trimen is a valid species from Ceylon.

Recent collectors have found E. dictyophyllum growing at 750 meters altitude, flowering in January, and record the vernacular names "capim manso", "capipoatinga", "gravatá manso", and "sempreviva do campo". The Hatschbach 1191 & 2057 and Reitz 5281, distributed as E. dictyophyllum, are actually Paepalanthus tessmannii Moldenke.

Additional citations: BRAZIL: Minas Gerais: Martius s.n. [Macbride photo 18686] (N—photo of cotype, W—photo of cotype). Santa Catarina: Reitz 4518 [Herb. Reitz 4740] (Le, S), 5218 (N); Smith & Reitz 9187 (N, Z); Smith, Reitz, & Sufridini 9451 (W—2248756); Ule 1382, in part (B, Z). São Paulo: L. Riedel 2303 (B—cotype, Ut—329—cotype). MOUNTED ILLUSTRATIONS: drawings & notes by Körnicke (B).

ERIOCAULON DIMORPHOELYTRUM Koyama

Synonymy: Eriocaulon dimorphoelytron Koyama ex Moldenke, Résumé 480, sphalm. 1959.

Bibliography: Koyama, Journ. Jap. Bot. 31: 7—9, fig. 2. 1956; Moldenke, Résumé 173 & 480. 1959; Koyama in Kitamura, Murata, & Koyama, Col. Illustr. Herb. Pl. Japan 183. 1964; Moldenke, Résumé

Suppl. 12: 9. 1965; G. Taylor, Ind. Kew. Suppl. 13: 52. 1966.

Illustrations: Koyama, Journ. Jap. Bot. 31: 7, fig. 2. 1956.

The type of this species was collected by Hiroshi Hara in a swampy place at Akatashiro, Ozegahara, in the province of Kodzuke, Honshu, Japan, on August 20, 1955, and is deposited in the herbarium of the University of Tokyo. Koyama (1956) says of this species "Visum extradium huius speciei E. decemfloro Maxim. quod flores dimeras habet. plus minus propincuum videtur, sed omnibus speciebus similibus huc usque ex Asia orientali descriptis floribus perfecte trimeris, calyce floris foeminei albido praeter margine apicis parte dorsalique glaberrimo, corolla floris masculi lobis inaequalibus etc. valde dissimilis est." He records the vernacular name "yuki-imunohige".

ERIOCAULON DIMORPHOPETALUM Moldenke

Bibliography: Moldenke, Phytologia 3: 323. 1950; Moldenke, Fieldiana Bot. 28: 116--117. 1951; J. A. Steyerl., Fieldiana Bot. 28: 1157. 1957; Moldenke, Résumé 71 & 480. 1959; G. Taylor, Ind. Kew. Suppl. 12: 55. 1959; Moldenke, Résumé Suppl. 1: 5. 1959; J. A. Steyerl., Act. Bot. Venez. 1: 195. 1966.

Additional citations: COLOMBIA: Cundinamarca: Karsten s.n. [Llanos de la Quebrada] (V).

ERIOCAULON DIOECUM Ruhl.

Bibliography: Ruhl. in Fedde, Repert. Sp. Nov. 22: 29. 1925; A. W. Hill, Ind. Kew. Suppl. 7: 88. 1929; Moldenke, N. Am. Fl. 19 (1): 18 & 22. 1937; Moldenke, Phytologia 1: 316. 1939; Moldenke, Known Geogr. Distrib. Erioc. 4 & 34. 1946; León, Fl. Cuba 1: 280. 1946; Moldenke, Résumé 51 & 480. 1959.

Additional citations: CUBA: Pinar del Río: Ekman 12807 (N—photo of type, S—type, Z—photo of type).

ERIOCAULON DISEPALUM Ridl.

Bibliography: H. N. Ridl., Journ. Fed. Malay States Mus. 10: 155. 1920; H. N. Ridl., Fl. Mal. Penins. 5: 136. 1925; A. W. Hill, Ind. Kew. Suppl. 6: 78 (1926) and 7: 88. 1929; Moldenke, Known Geogr. Distrib. Erioc. 26 & 34. 1946; Moldenke, Résumé 180 & 480. 1959.

This species is known thus far only from Kelantan, Malaya.

ERIOCAULON DREGEI Hochst.

Bibliography: Hochst., Flora 28: 341. 1845; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 1, 1: 878. 1893; Ruhl. in Engl., Pflanzenreich 13 (4-30): 62, 75, & 285. 1903; H. Lecomte, Bull. Soc. Bot. France 55: 571 (1908) and 55: 644. 1909; Arwidsson, Bot. Notiser 1934: 83. 1934; Moldenke, Known Geogr. Distrib. Erioc. 22 & 34. 1946; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 2, 1: 878. 1946; Moldenke, Phytologia 3: 323--324. 1950; Moldenke, Résumé 153 & 480. 1959; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 3, 1: 878. 1960; Killick, Bot. Surv. S. Afr. Mem. 34: 87 & 119. 1963; R. H. Compton, Journ. S. Afr. Bot. Suppl. 6: 19

& 33. 1966; Batten & Bokelmann, Wild Fls. East. Cape Prov. 3, pl. 5 (3). 1966; Moldenke, Résumé Suppl. 16: 8. 1968.

Illustrations: Batten & Bokelmann, Wild Fls. East. Cape Prov. pl. 5 (3) [in color]. 1966.

Batten & Bokelmann (1966) tell us that this is a perennial herb, to 25 cm. tall, found in marshes and damp places at the coast and at higher altitudes near King William's Town and also in the coastal belt of Natal, flowering in December. Killick (1963) calls it a component of the "flush community of hydrosere that occurs over the eyes of streams". The Lakye de Vilers s.n. [Tamatave, 1887], distributed as E. dregei, is actually E. fenestratum Bojer.

Additional citations: SOUTH AFRICA: Cape of Good Hope: Drège 4101 (S--isotype). MOUNTED ILLUSTRATIONS: drawings & notes by Kürnicke (B).

ERIOCAULON DUTHIEI Hook. f.

Bibliography: Hook. f., Fl. Brit. Ind. 6: 579. 1893; Durand & Jacks., Ind. Kew. Suppl. 1, pr. 1, 158. 1902; Ruhl. in Engl., Pflanzenreich 13 (4-30): 103, 106, & 285. 1903; Fyson, Journ. Indian Bot. 2: 200, pl. 7. 1921; Durand & Jacks., Ind. Kew. Suppl. 1, pr. 2, 158. 1941; Moldenke, Known Geogr. Distrib. Erioc. 23 & 34. 1946; Moldenke, Résumé 162 & 480. 1959; Durand & Jacks., Ind. Kew. Suppl. 1, pr. 3, 158. 1959; Thanikaimoni, Pollen & Spores 7: 184. 1965.

Illustrations: Fyson, Journ. Indian Bot. 2: pl. 7. 1921.

Fyson (1921) describes this species as follows: "Stem 0. Leaves 3/4 in. long, broadly oblanceolate acute from a 1/6 in. wide base. Scapes numerous 1 to 6 in. slender. Heads 1/6 in. Involucral bracts pale, not projecting beyond the floral. Floral bracts oblong cuspidate, nearly glabrous. Receptacle tall, glabrous or with a few hairs. Sepals 2 only, in both sexes. Female petals narrow, nearly glabrous. Seeds oval, yellowish brown with darker markings. Male flowers. -- Sepals 2; otherwise normal, anthers black. Plate 7. Central Provinces, one collection only seen. The scapes are taller, the heads smaller and the involucre less horizontal than in E. truncatum."

The original place of publication of this species' name is sometimes cited as "1894", but pages 449--672 of that volume of Hooker's work were actually issued in 1893.

Additional citations: INDIA: Madhya Pradesh: Duthie 8436 (B--isotype, Z--isotype).

ERIOCAULON EBERHARDTII H. Lecomte

Bibliography: H. Lecomte, Not. Syst. 2: 215. 1912; Moldenke, Known Geogr. Distrib. Erioc. 26 & 34. 1946; Moldenke, Résumé 176 & 480. 1959; Moldenke, Phytologia 17: 498. 1968.

Lecomte (1912) describes this species as follows: "Caulis elongatus, 8 cm. longus, foliosus. Folia 8--10 cm. longa, numerosa, linearia, fenestrata, 3--4 nervia, basi 1--1,5 lata, apice acuta. Pedunculi complures, 13--30 cm. longi, vix torti, 6-

costati, glabri. Vaginae laxae, oblique fissae, 4 cm. longae. Capitula villosa, fere sphaerica, 6--7 mm. lata. Bractae involucrantibus oblongae, 2 mm. longae, apice villosae. Flos ♂: sepala 3, libera, duo plus minus carinata, apice dorso villosa; petalorum tubus apice lobis 3, inaequalibus, villosis, glandulosis instructus; antherae nigrae. Flos ♀: sepala 3, linearia, libera, apice villosa, petala 3, spathulata, villosa, glandulosa. Annam: Dalat à Da-ninh, no. 1430 (Lecomte et Finet). L'Eriocaulon Eberhardtii est une plante des mares, avec une tige assez longue, couverte de feuilles lineaires-allongées. Cette espèce se distingue de l'E. rivulare Dalz. par ses hampes à 6 côtes au lieu de 10 et par les anthères noires au lieu d'être blanches."

ERIOCAULON ECHINACEUM Van Royen

Bibliography: Van Royen, *Blumea* 10: 131. 1960; G. Taylor, *Ind. Kew. Suppl.* 13: 52. 1966.

This species is said to be endemic to Celebes.

ERIOCAULON ECHINOSPERMOIDEUM Ruhl.

Bibliography: Ruhl. in *Fedde, Repert. Sp. Nov.* 22: 31. 1925; A. W. Hill, *Ind. Kew. Suppl.* 7: 88. 1929; Moldenke, *N. Am. Fl.* 19 (1): 19 & 27--28. 1937; Moldenke, *Phytologia* 1: 316. 1939; Moldenke, *Known Geogr. Distrib. Erioc.* 4 & 34. 1946; León, *Fl. Cuba* 1: 281. 1946; Moldenke, *Résumé* 51 & 480. 1959.

Additional citations: CUBA: Las Villas: Ekman 17082 (N--isotype, N--photo of type, S--type, Z--photo of type).

ERIOCAULON ECHINOSPERMUM C. Wright

Bibliography: Sauv., *Fl. Cub.* 162. 1868; Sauv., *Anal. Acad. Ci. Habana* 7: 716. 1871; Jacks. in *Hook. f. & Jacks., Ind. Kew.*, pr. 1, 1: 878. 1893; Ruhl. in *Engl., Pflanzenreich* 13 (4-30): 32, 35, & 285. 1903; Prain, *Ind. Kew. Suppl.* 4, pr. 1, 82. 1913; Moldenke, *N. Am. Fl.* 19 (1): 19 & 26. 1937; Prain, *Ind. Kew. Suppl.* 4, pr. 2, 82. 1938; Moldenke, *Phytologia* 1: 316. 1939; Moldenke, *Known Geogr. Distrib. Erioc.* 4 & 34. 1946; León, *Fl. Cuba* 1: 279--280. 1946; Jacks. in *Hook. f. & Jacks., Ind. Kew.*, pr. 2, 1: 878. 1946; Moldenke, *Phytologia* 3: 324. 1950; Moldenke, *Résumé* 51 & 480. 1959; Jacks. in *Hook. f. & Jacks., Ind. Kew.*, pr. 3, 1: 878. 1960; Moldenke, *Phytologia* 17: 384. 1968.

It should be noted here that Prain (1913) cites the original description of this taxon as "1870", but the late Dr. J. H. Barnhart assured me that 1871 is the correct date.

Additional citations: CUBA: Pinar del Río: Ekman 18127 (S), 18128 (S), 18767 (S); C. Wright 3738 (S--isotype). Province undetermined: C. Wright s.n. (S).

ERIOCAULON ECHINULATUM Mart.

Bibliography: Mart. in *Wall., Pl. Asiat. Rar.* 3: 29. 1832; *Wall., Numer. List* 208 ["207"]. 1832; Kunth, *Enum. Pl.* 3: 569. 1841; Körn. in *Mart., Fl. Bras.* 3 (1): 475. 1863; Jacks. in *Hook.*

f. & Jacks., Ind. Kew., pr. 1, 1: 878. 1893; Hook. f., Fl. Brit. Ind. 6: 579. 1894; Ruhl. in Engl., Pflanzenreich 13 (4-30): 103, 106, & 285. 1903; Fyson, Journ. Indian Bot. 2: 317, pl. 37. 1921; H. Lecomte, Fl. Gén. Indochine 7: 14. 1922; Moldenke, Known Geogr. Distrib. Erioc. 24--26 & 34. 1946; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 2, 1: 878. 1946; Moldenke, Phytologia 3: 324. 1950; Koyama, Philip. Journ. Sci. Bot. 84: 368--369. 1955; Moldenke, Résumé 165, 166, 169, 176, 178, 184, 201, 287, & 480. 1959; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 3, 1: 878. 1960; Koyama in Kitamura, Murata, & Koyama, Col. Illustr. Herb. Pl. Japan 179. 1964; Thanikaimoni, Pollen & Spores 7: 184. 1965.

Kunth (1841) describes this plant as follows: "Digitale; glabrum; rhizomate annuo; scapis quadrangulis, folia angusto-linearia acuminata triplo quadruplo superantibus; capitulis globosis, per bracteas subrhombeas longe mucronatas rigidulas echinulatis, pallidis. Mart. -- Tavoy. -- Bracteae semi-lineam longae, firmulae, siccae, mucrone totius longitudinis dimidium aequante. Flores minimi; masculi: calyx exterior: petala lateralia carinata, carina sat prominula; interior tubaeformis; laciniis cum staminibus brevioribus alternantibus. Antherae globosae, nigricantes. Flores feminei virescentes, stipatâ pilis septatis: sepala exteriora lateralia oblique carinata, elongato-rhombea. Ovarium longe stipitatum. Stylus tripartitus. (Ex Mart.)"

Fyson (1921) says of it: "(Wall. Cat. 6082 in Herb. Calc!).... Leaves acute or aculeate, 1/2 -- 3 in. Scapes many, 3--6 in., slender. Heads 1/6 in. globose except for the horizontal base, very echinate by the acuminate floral bracts. Female sepals 2 only, winged down the back; petals 0. Male flowers normal, 3-merous. Plate 37. Burma: Kelaben, Tavoy."

The E. echinulatum var. seticuspe (Ohwi) Ohwi is herein discussed under E. seticuspe Ohwi.

Koyama (1955) says "Siam: Nakay (B. Hayata, sin. num.!) -- Cochinchina, Cambodia, Tonkin, Philippines, China (Kwantung), Burma. Note. This is a very distinct species chiefly by awned bracts and 2 herbaceous scaly sepals ending in an awnlike tip. It is of great interest that an Eriocaulon which bears a very close resemblance to this species has been reported from Kiushu, the southwesternmost part of Japan, by Dr. Ohwi recently. Its name is E. seticuspe."

Recent collectors have found E. echinulatum growing in paddy fields, at altitudes of 100--1300 meters, with white or greenish (immature) flowers, in anthesis in September and October. Brass reports it "common on wet plains" in Papua, while Smitinand describes it as a "common herb on rocks in damp places" and "common in savannas together with E. achiton" in Thailand. The specific epithet is sometimes written with its initial letter uppercased for no valid reason. M. Ramos s.n. [Herb. Philip. Bur. Sci. 41340] is a mixture with E. gracile var. puberulentum Moldenke and with something not eriocaulaceous.

Additional citations: BURMA: Tenasserim: W. Gomez 7 (Br--iso-

type, N--photo of isotype, Z--photo of isotype); T. Philippi 18 (B). CHINA: Kwangtung: Hance s.n. [Near Canton] (T); Sampson 13453 (B). THAILAND: B. Hayata s.n. [Nakay, 16/XII/1921] (Ss); Smitinand 1934 [Herb. Royal Forest Dept. 9424] (Ss), 1934a [Herb. Royal Forest Dept. 11525] (Z), 1933 [Herb. Royal Forest Dept. 9450] (Ss), 3605 [Herb. Royal Forest Dept. 18241] (Sm), 3678 [Herb. Royal Forest Dept. 15467] (Sm); Sprengsen, Larsen, & Hansen 6325 (S), 7257 (Cp); Vesterdal 5e (Cp). INDOCHINA: Annam: Schmid 1410 (N). WESTERN PACIFIC ISLANDS: PHILIPPINE ISLANDS: Culion: M. Ramos s.n. [Herb. Philip. Bur. Sci. 41340, in part] (Ca--239520). MELANESIA: NEW GUINEA: Papua: Brass 7823 (N).

ERIOCAULON EDWARDII Fyson

Synonymy: Eriocaulon edwardsii Fyson ex Moldenke, *Known Geogr.* Distrib. Erioc. 23 & 34, sphalm. 1946.

Bibliography: Fyson, *Journ. Indian Bot.* 1: 50 (1919) and 2: 313, pl. 34. 1921; Haines, *Bot. Bihar & Orissa* 6: 1067, 1070, & 1071. 1924; A. W. Hill, *Ind. Kew. Suppl.* 6: 78 (1926) and 7: 89. 1929; Moldenke, *Known Geogr. Distrib. Erioc.* 23 & 34. 1946; Moldenke, *Phytologia* 3: 324. 1950; Razi, *Rec. Bot. Surv. India* 18: 19. 1959; Moldenke, *Résumé* 162, 287, & 480. 1959; Moldenke, *Résumé Suppl.* 3: 17. 1962.

Illustrations: Fyson, *Journ. Indian Bot.* 2: pl. 34. 1921.

Fyson (1921) describes this plant as follows: "(Clarke No. 34327 in Herb. Calc!) Caulis perbrevis. Folia 2--5 cm. longa, 4--6 mm. basi lata, acuta, glabra, tenuia. Pedunculi 6--20 cm. tenues. Capitula 3--5 mm obconica sed demum globosa, bractae involucrentes nec reflexae, 4 mm. longa, scariosae, glabrae, ellipto-acutae, quam bractis flores superantibus paulo longiores. Haec bractae glabrae, obovate-acutae, pallido-nigrae. Receptaculum altum villosum. Flos ♀ sepala 2, tenuia; petala 2 linearia, aut 0. Semina 3. Flos ♂ sepala 2? in spatham connata; petala 0. antherae 6, nigrae. Plate 34. Himalayas: Sikkim; Bengal; Chota Nagpur. Scapes 3--4 times the leaves. Heads globose or nearly so, in bud over-topped by the acute involucrent bracts. This species stands in much the same relation to the other two members of this section as E. minutum to the first two species of the next section. It represents a corresponding stage in the reduction of the floral parts accompanied by a lengthening of the involucrent bracts. It is possible that var. minor and minima of the previous species [E. hamiltonianum] should be included in it. The whole series forms a perfect example of gradual reduction in the floral parts."

The species is said to grow at Ranchi in Madhya Pradesh, India.

ERIOCAULON EDWARDII var. CLARKEI Haines

Bibliography: Haines, *Bot. Bihar & Orissa* 6: 1071. 1924.

Haines (1924) describes this taxon as follows: "To this species [E. edwardsii] I refer provisionally Clarke's No. 24788 col-

lected at Giridih (Hazaribagh), which was left unnamed by Hooker for the F. B. I. as being too young. It appears to be a variety with very acutely cuspidate bracts, involucre bracts erect .12" as long as whole head, about 6, oblong, pale, finely acuminate. Fl. bracts .1" fuscous, almost awned. Fem. sep. 2, narrowly linear. Petals 0 but stipes sometimes apparently villous above the sepals! Male sepals spathaceous, sometimes 3-toothed (but Fyson described his type as spathaceous with a '?', and I think it is either a matter of age, or position in the head, as I found obviously 2 free sepals in the type), staminal column clavate with about 3-5-stamens and a black gland, petals 0 or 1 minute linear. In the villous stipes it appears allied to the Brazilian E. griseum."

ERIOCAULON EHRENBERGIANUM Klotzsch

Additional synonymy: Eriocaulon benthamii Schlecht. apud Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 1, 1: 877, in syn. 1893 [not E. benthamii Kunth, 1903]. Eriocaulon nanum Klotzsch ex Moldenke, Résumé Suppl. 1: 17, in syn. 1959 [not E. nanum R. Br., 1810].

Bibliography: Schlecht., Linnaea 18: 434. 1844; Seem., Bot. Voy. Herald 221. 1854; Körn. in Mart., Fl. Bras. 3 (1): 491-492. 1863; Hemsli., Biol. Centr. Am. Bot. 3: 443. 1885; Sessé & Moc., Fl. Mex. 17. 1893; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 1, 1: 877 & 878. 1893; Ruhl. in Engl., Pflanzenreich 13 (4-30): 43, 49, 56, 60, 284, & 285. 1903; H. B. Davis, Life & Works Pringle 219. 1936; Moldenke, N. Am. Fl. 19 (1): 20 & 35. 1937; Moldenke, Phytologia 1: 316. 1939; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 2, 1: 877 & 878. 1946; Moldenke, Known Geogr. Distrib. Erioc. 4, 32, & 34. 1946; Moldenke, Phytologia 3: 324. 1950; Moldenke, Résumé 35, 41, 286, & 480. 1959; Moldenke, Résumé Suppl. 1: 17. 1959; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 3, 1: 877 & 878. 1960; Moldenke, Résumé Suppl. 3: 9 (1962) and 4: 4. 1962; Moldenke, Phytologia 17: 394 & 483. 1968.

It should be noted here that this species was originally based on Eerlandier 760, Ehrenberg & Aschenborn 531, and Schiede s.n., not on Ehrenberg 57 as stated by me in my 1950 work. However, in my 1937 work I designated the Schiede s.n. collection as lectotype. The species has been collected more recently in grassy seeps, at 2650-3000 meters altitude, flowering and fruiting in July. The E. nanum of Klotzsch is based on Ehrenberg s.n. in the herbarium of the Botanisches Museum at Berlin; E. nanum R. Br. is a valid species of Australia.

Although Jackson (1893) accredits the binomial, E. benthamii Schlecht., to Schlechtendal, Linnaea 18: 434 (1844), the binomial is there plainly written E. benthami and plainly accredited to Kunth.

Material has been misidentified and distributed in herbaria as E. benthami Kunth and Paepalanthus sp.

Additional & emended citations: MEXICO: Chiapas: Breedlove 9240 (Ac); E. W. Nelson 3235 (W-233538). Durango: F. W. Pennell

18386 (W--1641097). Federal District: Aschenborn 531 (B--cotype, B--cotype). Hidalgo: Pringle 8989, in part [Canales Station] (Ca--168293, S, S). Jalisco: Collector undesignated s.n. [Sept. 6, '92] (F--354591); R. McVaugh 13593 (M1), 14144 (M1); Pringle 2665 (Ca--115174). México: Berlandier 760 (B--cotype); C. A. Ehrenberg 57 (B, N); Gilly, Alexander, & Hernandez Xolocotzi 83 [E. J. Alexander 1958] (Z); J. G. Schaffner 226, in part (V--270500). Michoacán: Hitchcock & Stanford 7201 (Ca--710750). Oaxaca: W. H. Camp 2265 (M1). Puebla: Pringle 8989, in part [near Honey Station] (S). State undetermined: C. A. Ehrenberg s.n. (B); Hahn 14 [Lake Avalco] (B). GULF ISLANDS: Monserrate: C. A. Purpus 10179 (W--1209427). GUATEMALA: Chimaltenango: Salvin s.n. [Vol. de Fuego] (V--8392).

ERIOCAULON EKMANNII Ruhl.

Synonymy: Eriocaulon ekmanii Ruhl. ex León, Fl. Cuba 1: 280--281. 1946.

Bibliography: Ruhl. in Fedde, Repert. Sp. Nov. 22: 30. 1925; A. W. Hill, Ind. Kew. Suppl. 7: 89. 1929; Moldenke, N. Am. Fl. 19 (1): 19 & 30. 1937; Moldenke, Phytologia 1: 317. 1939; Moldenke, Known Geogr. Distrib. Erioc. 4 & 34. 1946; León, Fl. Cuba 1: 280--281. 1946; Moldenke, Phytologia 3: 324--325. 1950; Moldenke, Résumé 51 & 480. 1959.

Additional citations: CUBA: Pinar del Río: Ekman 17888 (N--photo of type, S--type, Z--photo of type).

ERIOCAULON ELEGANTULUM Engl.

Bibliography: Engl., Abh. Preuss. Akad. Wiss. 1894: 14. 1894; Engl., Pflanzenw. Ost-Afr. C: 133. 1895; Durand & Jacks., Ind. Kew. Suppl. 1, pr. 1, 158. 1902; Ruhl. in Engl., Pflanzenreich 13 (4-30): 63, 81, & 285. 1903; Durand & Jacks., Ind. Kew. Suppl. 1, pr. 2, 158. 1941; Moldenke, Known Geogr. Distrib. Erioc. 21, 22, & 34. 1946; Moldenke, Résumé 140, 144--146, 150, & 480. 1959; Durand & Jacks., Ind. Kew. Suppl. 1, pr. 3, 158. 1959.

Recent collectors have found this plant growing in grassy areas on cracking soil in river valley flats, at altitudes of 32-400 meters, flowering in February, June, and October. Drummond & Hemsley describe it as an annual, a few cm. tall, with the inflorescence pale bluish-gray.

Citations: CHAD: Schweinfurth III.223 (B, S). TANGANYIKA: Drummond & Hemsley 3063 (S); H. G. Faulkner 902 (B, S); A. Peter 52044 [IV.326] (B); Schlieben 2348 (B). ZANZIBAR: Hildebrandt 1056 (B--lectotype, Z--isotype). PORTUGUESE EAST AFRICA: Quilimane: H. G. Faulkner K.256 (N).

ERIOCAULON ELENORAE Fyson

Synonymy: Eriocaulon eleanorae Fyson, Journ. Indian Bot. 1: 50, nom. nud. 1919.